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00626 | Analytical Article

Permission to Waste? Reconsidering the Indonesian Legal Framework of Hazardous Waste Management from Environmental Rights Perspective

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Abstract

Indonesia's hazardous waste management regime represents a complex and evolving area of environmental regulation that raises fundamental questions about the protection of environmental rights. This study investigates how hazardous waste laws relate to environmental rights and examines whether current environmental provisions can be seen as implicitly allowing hazardous waste disposal. The central question is: how are these regulations perceived from the perspective of environmental rights? Using a normative legal research approach, the study analyzes both national and international legal standards for hazardous waste management. The findings reveal that Law No. 32 of 2009 on Environmental Protection and Management supports environmental rights by incorporating principles such as pollution prevention from the Stockholm Declaration and the precautionary principle from the Rio Declaration. However, Law No. 6 of 2023 and its regulations show inconsistencies; they require hazardous waste management through business licensing but lack specific penalties for violations. Indonesia permits the export and transit of hazardous waste, yet the rules around these activities are insufficient. For instance, Indonesia is not listed as a transit country under the Protocol on Liability and Compensation for Damage from Transboundary Movements of Hazardous Wastes and Their Disposal under the Basel Convention (1999), creating accountability gaps for cross-border environmental harm. This study urges a re-evaluation of whether current regulations sufficiently protect the environment and support environmentally sound management both domestically and internationally.

Keywords

Hazardous waste; Environmental rights; Transboundary movement; Indonesia

Introduction

Indonesia faces a growing challenge in managing hazardous waste amid rapid industrialisation and economic expansion.

Indonesia generated a total of 86,846,026 tons of hazardous waste, as reported by all businesses in the year 2023 (Djuwita, 2024). Data from the Ministry of Environment and Forestry in 2021, as cited by Katadata, indicates that Indonesia produced approximately 60 million tons of hazardous waste during that year. Four primary sectors contribute to this waste: manufacturing (comprising 2,897 industries), infrastructure (2,406 industries), agroindustry (2,103 industries), and energy, along with oil and gas mining (947 industries) (Dihni, 2022). Despite the scale of the problem, national hazardous waste data remain fragmented, difficult to access, and inconsistently reported, limiting transparency and undermining effective regulatory oversight.

There is an apparent increase in hazardous waste levels. Managing this waste requires extra care, as it can cause pollution and harm the environment (Hassan and Saleh, 2022). Hazardous waste-related pollution, especially from industries, can occur directly, where pollutants impact toxicity and threaten human, animal, and plant health, as well as disturb the ecological balance of water, air, and soil, or indirectly, when chemicals react with water and soil, leading to contamination (Nurlani, 2019). Hazardous waste data is also mainly found in e-waste or electronic waste. In 2022, the United Nations Institute for Training and Research (UNITAR) introduced the Global Transboundary E-waste Flows Monitor, which focuses specifically on electronic waste, a type of hazardous waste. The report demonstrates that Indonesia is a key destination for transboundary shipments of hazardous waste from various regions, including North America, East Asia, South Asia, Western Europe, Eastern Europe, and within the country itself (Cornelis *et al*., 2024). This suggests that Indonesia has significantly become a dumping ground for waste from multiple countries across different continents.

Furthermore, in its 2024 report, UNITAR mentioned that e-waste management in Indonesia is still in the early stages of development (Cornelis *et al*., 2024). Globally, compared to other countries, Indonesia has limited regulations, facilities, and technology for the safe and responsible disposal of e-waste. Indonesia has the highest e-waste production in Southeast Asia, generating approximately 1.9 million tonnes annually**,** with per capita e-waste reaching 6.9 kg in 2022. Thailand ranks second, followed by the Philippines. When combined with the rest of Asia, Indonesia is fourth after China, India, and Japan (Cornelis *et al*., 2024).

The data presented above indicate that Indonesia has not yet developed the capacity to provide comprehensive information on hazardous waste. This is a significant issue because the hazardous waste endangers human health (Hoque, Roshed and Asaduzzaman, 2023). This contradicts Article 28H, paragraph (1), of the 1945 Constitution of the Republic of Indonesia, which concerns the right to a good and healthy living environment (Majelis Permusyawaratan Rakyat RI, 2020). Furthermore, regarding regulatory frameworks, Indonesia has norms that may be circumvented for the transboundary movement of hazardous waste, including transit and export activities. Regulations of hazardous waste can be traced to Law No. 32 of 2009 on Environmental Protection and Management (Environmental Law), as amended by Law No. 6 of 2023 regarding the Enactment of Government Regulation in Lieu of Law No. 2 of 2022 on Job Creation, hereinafter referred to as the Job Creation Law. Additionally, under the implementing regulations aligned with the Job Creation Law, Government Regulation No. 22 of 2021 on the Implementation of Environmental Protection and Management is applicable.

The regulation *a quo* states that "everyone who produces waste is required to manage the waste they produce". (Menteri Hukum dan Hak Asasi Manusia Republik Indonesia, 2021). For hazardous waste management licensing, it can be classified into eight categories: reduction, storage, collection, transportation, utilization, treatment, hoarding, and dumping or disposal (Menteri Hukum dan Hak Asasi Manusia Republik Indonesia, 2021). Regarding hazardous waste management in the country, several challenges persist. The primary obstacle stems from setbacks following the enactment of the Job Creation Law, notably the repealing of Article 102 of Law No. 32 of 2009 on Environmental Law, which delineates criminal sanctions for the disposal of hazardous waste without a permit. Additionally, the implementing regulations of the Job Creation Law, specifically Article 505 of Government Regulation No. 22 of 2021, diminish preventive measures associated with the imposition of administrative sanctions. Additionally, Indonesia's Government Regulation No. 22 of 2021 permits the export of hazardous waste for utilization and processing, with certain restrictions (see Figure 1), and allows the country to serve as a transit country (see Figure 4). This shows legal provisions for the transboundary movement of hazardous waste. Although Indonesia ratified the 1989 Basel Convention and incorporated relevant provisions into its legislation, some loopholes remain. For instance, the precautionary principle from the Rio Declaration and the Environmentally Sound Management (ESM) principles in the Basel Convention are not fully implemented. ESM is the core principle underpinning the Basel Convention on the Control of Transboundary Movement of Hazardous Waste and Their Disposal (Setiawan, 2022). Nonetheless, Indonesia has yet to fully comply with the Basel Convention, particularly regarding export activities. Indonesia's status as a transit country, as outlined in Article 409 of Government Regulation No. 22 of 2021, is currently insufficient to safeguard against environmental harm and unexpected events. This is because Indonesia is not listed in Annex A of the Protocol on Liability and Compensation for Damage from Transboundary Movements of Hazardous Wastes and Their Disposal. Annex A details non-party transit countries that are covered by the protocol if they have adopted relevant regional or multilateral agreements.

Against this background, this study examines the relationship between hazardous waste regulation and environmental rights in Indonesia. It critically assesses whether the current legal framework genuinely protects the right to a clean and healthy environment or whether it implicitly legitimises hazardous waste disposal through regulatory gaps and weakened enforcement. The central research question is: how are Indonesia's hazardous waste regulations perceived from an environmental rights perspective? The study aims to evaluate existing laws and policies and to advocate for regulatory standards that fully integrate precautionary and environmentally sound management principles, align with international obligations, and effectively safeguard environmental rights at both national and transboundary levels.

Methodology

This research employs the normative doctrinal legal research method (Marzuki, 2023) primarily utilizing a statutory approach and a conceptual approach. The statutory approach examines relevant national legislation and implementing regulations, including Law No. 32 of 2009 on Environmental Protection and Management, Law No. 6 of 2023 on Job Creation, and Government Regulation No. 22 of 2021, as well as applicable

international legal instruments such as the Rio Declaration and the Basel Convention. The conceptual approach is used to analyse environmental rights and precautionary principles as normative benchmarks for assessing the adequacy of Indonesia's hazardous waste governance framework. The analysis is conducted using qualitative deductive reasoning, moving from general principles of environmental law to their application within Indonesia's regulatory system. Primary legal materials include statutes, government regulations, and international treaties, while secondary legal sources comprise academic textbooks, peer-reviewed journals, and expert commentaries. To contextualise the legal analysis, the study also draws on non-legal materials, including official reports, policy documents, and relevant media sources, particularly those addressing hazardous waste generation and transboundary movements. The analysis is further supported by relevant charts that illustrate the flow of hazardous waste export and transit regulations in Indonesia.

Understanding the Precautionary Principle in Regulations on Hazardous Waste Management in Indonesia

One of the principles in the Rio Declaration is the precautionary principle, as outlined in Principle 15 (Wiersema, 2022). This principle acknowledges that scientific certainty often arrives too late to inform policy decisions. However, preventive measures should not be postponed just because environmental damage has not yet occurred (Rahmadi, 2023). Furthermore, negative impacts often lead to irreversible losses, so environmental protection measures must still be implemented with caution (Malaihollo, 2021). Although this principle remains controversial, and on one hand, the legal status and exact meaning of the precautionary principle also remain unclear (Malaihollo, 2021), the precautionary principle remains pertinent and applicable on a global scale.

The precautionary principle supports taking preventive action in situations involving potential risks, even when there is no conclusive scientific proof of these risks. When faced with serious or irreversible threats to human or environmental health, scientific uncertainty should not be used as an excuse to delay preventive measures (Wu *et al*., 2024). The precautionary principle has historically been applied in situations where avoiding false negatives was more critical than avoiding false positives (Persson, 2016). In Indonesia, the precautionary principle isn't explicitly mentioned in the 1945 Constitution of the Republic of Indonesia. However, Article 33 paragraph (4) of the 1945 Constitution of the Republic of Indonesia includes a clause emphasizing "environmental awareness" in managing the national economy, which relates to the approach of precautionary principle (Majelis Permusyawaratan Rakyat RI, 2020). The idea of environmental awareness in managing the national economy should also be understood primarily to prevent more severe negative effects on nature's destruction and the environment (Faiz, 2016). Furthermore, the precautionary principle appears to have been incorporated in Article 2 (f) of Law No. 32 of 2009, which declares, "environmental protection and management are implemented based on the precautionary principle".

However, the management of hazardous waste across different countries is guided by the precautionary principle, which is interpreted in accordance with each nation's legal framework and policies. One of the reasons for this is believed to be the absence of comprehensive guidance on the application of the precautionary principle (Wibisana,

2011). During its development, several countries have established their own guidance documents, which have been mutually recognized. For example, the United Kingdom developed the Interdepartmental Liaison Group on Risk Assessment Guidance, outlining a series of guidelines for implementing the precautionary principle (UK Parliament, 2025). Additionally, the EU has developed Guidance on The Application of The Precautionary Principle. While not legally binding on governments, this guidance can serve as a reference policy-making (The Horizon, 2020). Meanwhile, there are no similar guidelines in ASEAN and particularly in Indonesia. In Indonesia, the precautionary principle is reflected in numerous court rulings, regulations, and policies regarding hazardous waste management. The absence of clear guidance on the precautionary principle allows its interpretation to vary based on each country's needs and circumstances. However, this also leads to a broader and more complex understanding that can be difficult to apply practically.

Latifah (2016) identifies the precautionary principle into several key components: the existence of scientific uncertainty regarding potential risks; the requirement for scientific assessment of those risks; the possibility of serious or irreversible harm; the adoption of proportionate preventive measures; and the shifting of the burden of proof to parties engaging in potentially harmful activities. She further argues that the scope of the precautionary principle's application should be determined by geographical conditions and the specific ecological systems requiring protection. These elements provide a useful analytical framework for assessing whether Indonesia's hazardous waste regulations genuinely reflect precautionary governance or merely acknowledge the principle in abstract terms.

Regulations Governing the Management of Hazardous Waste in Indonesia Concerning Domestic Waste Circulation

Hazardous waste management regulations are detailed in Government Regulation No. 22 of 2021, which aligns with the Job Creation Law and defines hazardous waste as residues from activities or operations that contain hazardous substances. Hazardous and toxic substances include materials, energy sources, and other components that can pollute or harm the environment, human health, and the survival of humans and other living organisms due to their nature, concentration, or volume. Hazardous waste can originate from various industries, including healthcare, mining, and electronics. Government Regulation No. 22 of 2021 comprehensively regulates hazardous waste management through eight interconnected stages: reduction, storage, collection, transportation, utilization, treatment, disposal, and dumping. The eight aspects of hazardous waste management necessitate separate yet interconnected permits. The process of developing the hazardous waste management regulation and licensing can be visualized in figure 1.

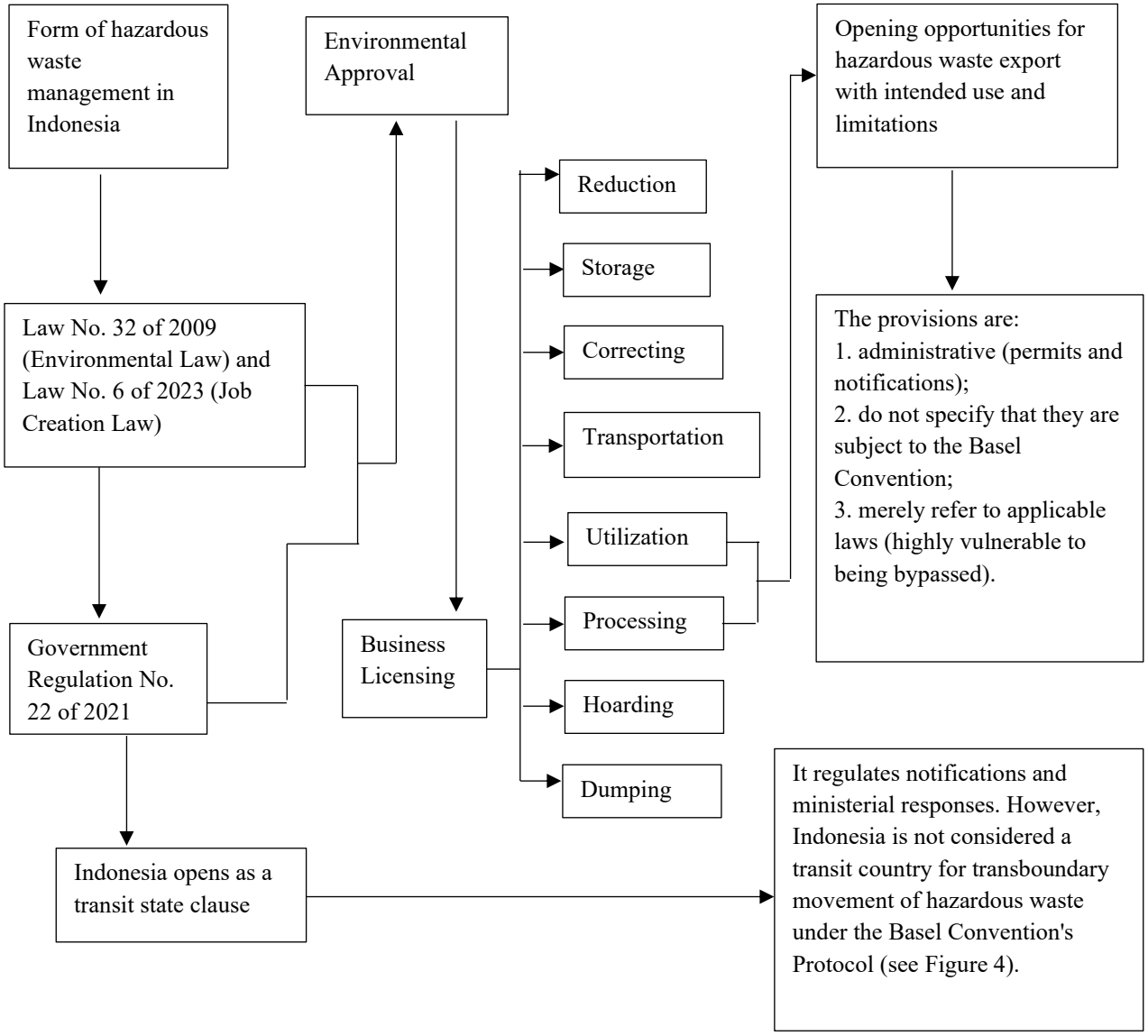
Form of hazardous waste management in Indonesia
Environmental Approval
Opening opportunities for hazardous waste export with intended use and limitations
Reduction
Storage
Correcting
Transportation
Utilization
Processing
Hoarding
Dumping
Law No. 32 of 2009 (Environmental Law) and Law No. 6 of 2023 (Job Creation Law)
The provisions are:
1. administrative (permits and notifications);
2. do not specify that they are subject to the Basel Convention;
3. merely refer to applicable laws (highly vulnerable to being bypassed).
Government Regulation No. 22 of 2021
Business Licensing
Indonesia opens as a transit state clause
It regulates notifications and ministerial responses. However, Indonesia is not considered a transit country for transboundary movement of hazardous waste under the Basel Convention's Protocol (see Figure 4).

Figure 1: Regulation Process for Managing Hazardous Waste in Indonesia Related to Domestic Waste Circulation

The regulatory framework reveals that, among the eight management stages, utilization and processing may involve export activities under specific conditions. Additionally, Government Regulation No. 22 of 2021 allows Indonesia to function as a transit country for hazardous waste. While these provisions facilitate economic activities and international cooperation, they also expose Indonesia to significant environmental risks, particularly in the absence of adequate safeguards against illegal transboundary movements. This risk is heightened by the fact that Indonesia is not protected under Annex A of the Basel Convention's Protocol on Liability and Compensation (United Nations Environment Programme, 2014), leaving it vulnerable to environmental harm

arising from hazardous waste transit. Issues relating to exports, imports, and transboundary risks are examined further in next sections.

Furthermore, under Article 22 number 20 of Law No. 6 of 2023 on Job Creation Law, which amends Article 59 of Law No. 32 of 2009, it is required that hazardous waste management must obtain a business license or approval from either the central or local government. Additionally, the central or local government must incorporate environmental requirements and obligations that hazardous waste managers must follow into the licensing or approval process. This regulation is further detailed in Government Regulation No. 22 of 2021. Business licensing is the legal permission granted to business operators to start and operate their businesses and/or activities. Meanwhile, environmental approval is a decision on environmental feasibility or a statement of commitment to environmental management issued by the central or local government. Before the establishment of the business licensing mechanism and/or similar systems, the Environmental Law used the term "environmental permit" as the basis for allowing individuals to engage in business activities and/or operations for environmental protection and management purposes, as a prerequisite for obtaining a business license and/or operational permit (Republik Indonesia, 2009). Andri G Wibisana Law No. 32 of 2009 introduced two forms of permit integration (Wibisana, 2018). Internal integration consolidated various environmental management permits into a single environmental permit, while external integration established a sequential relationship between environmental permits and business permits. Under this framework, revocation of an environmental permit automatically resulted in the invalidation of the corresponding business permit, thereby reinforcing preventive environmental control. External integration, on the other hand, refers to the sequential linking of business permits with environmental permits, often referred to as chain permits. Therefore, environmental permits are a prerequisite for business permits, and if an environmental permit is revoked, the associated business permit is also revoked.

Under the Environmental Protection and Management Law, operators are required to manage hazardous waste properly. Legal penalties are imposed on individuals who operate without obtaining a hazardous waste management permit. This requirement is stipulated in Article 59 paragraph (1) and (4) of the *a quo* regulation, which states:

> "(1) Every person who generates hazardous waste is obligated to manage the waste they produce."
> "(4) The management of hazardous waste must obtain a permit from the Minister, governor, or regent/mayor according to their respective authorities."

The two paragraphs of Article 59 of the Environmental Law address criminal penalties, as articulated in Articles 102 and 103 of the same law. Sukanda Husin argues that Article 59 paragraph (1) elaborates on the pollution prevention principle outlined in the Stockholm Declaration 1972 (Mahkamah Konstitusi Republik Indonesia, 2014). Regarding the criminal penalties outlined in Articles 102 and 103 of the Environmental Protection and Management Law, Sukanda Husin states that:

> "The criminal penalties, as outlined in Articles 102 and 103, are essentially the enforcement of the principle of *in cauda venenum*. This indicates that criminal sanctions are solely designed to ensure adherence to administrative regulations by legal entities. Such an approach is aligned with the principle of subsidiarity in

criminal law (Mahkamah Konstitusi Republik Indonesia, 2014)".

The Government's statement in Constitutional Court Decision No. 18/PUU-XII/2014 emphasizes that improper, incorrect, or negligent management of hazardous waste can pose risks to human health and the environment, potentially causing harm to both environment (Mahkamah Konstitusi Republik Indonesia, 2014). Additionally, the Government emphasizes that licensing instruments must be used cautiously as a control measure for managing hazardous waste, given the significant risks it presents to human health and the environment (Mahkamah Konstitusi Republik Indonesia, 2014). The Constitutional Court, in its *a quo* decision stated that a permit, from the perspective of administrative law, constitutes one of the measures and strategies employed by the state, whether the Government or Local Government, to oversee or regulate a legal entity concerning activities associated with it (Mahkamah Konstitusi Republik Indonesia, 2014).

Article 59 of Law No. 32 of 2009 relates to Articles 102 and 103 of the same regulation, which outline sanctions. Linda Yanti Sulistiawati explains that these articles include administrative criminal provisions, meaning criminal law used to support the enforcement, protection, and management of environmental law (Mahkamah Konstitusi Republik Indonesia, 2014). According to Arief, 2005 administrative criminal law primarily focuses on setting policies for using criminal law to implement administrative rules. Consequently, Articles 102 and 103 are part of administrative criminal law, serving as criminal law tools to uphold environmental regulations within the scope of administrative law. The preventive function of hazardous waste licensing was affirmed by the Constitutional Court in Decision No. 18/PUU-XII/2014, which emphasized that improper or negligent hazardous waste management poses serious risks to both human health and the environment. The Court underscored that permits serve as key administrative instruments enabling the state to regulate environmentally risky activities. However, the Job Creation Law fundamentally altered this enforcement structure. One of its most consequential changes was the repeal of Article 102 of Law No. 32 of 2009, which criminalized hazardous waste management without a permit (Kementerian Hukum dan Hak Asasi Manusia, 2020). Furthermore, the simplification of business licensing also emerged as a response to the complexities associated with conducting business in Indonesia, where the licensing sector is excessively regulated, leading to an environment that is ineffective, inefficient, and characterized by legal uncertainty for investment (Kementerian Hukum dan Hak Asasi Manusia, 2020).

One of the provisions repealed by Law No. 6 of 2023 is Article 102 of Law No. 32 of 2009, which historically regulated the management of hazardous waste without a permit. Article 103, which sanctions failure to manage hazardous waste in accordance with regulatory requirements, remains in force. As a result, managing hazardous waste without authorization no longer attracts direct criminal sanctions, while liability arises only when substantive management obligations are violated. This shift significantly weakens the preventive character of environmental law enforcement. Notably, the Academic Document of the Job Creation Law indicates that the repeal of Article 102 was not originally intended. Articles 102 and 103 were initially proposed to be converted into administrative sanctions with criminal penalties applied only upon non-compliance. Nevertheless, Article 102 was ultimately deleted in Law No. 6 of 2023, creating a regulatory gap. Further weakening of enforcement is evident in Government Regulation

No. 22 of 2021, which introduces a more flexible administrative sanctions regime compared to the repealed Government Regulation No. 101 of 2014. As shown in Table 1, sanctions under the current regulation are imposed only when violations are identified during supervision, rather than when regulatory requirements are not fulfilled.

Table 1: Comparison of Administrative Sanctions Provisions

Article 243 of Government Regulation Number 101 of 2014	Article 505 of Government Regulation Number 22 of 2021
"Any person who produces hazardous waste that fails to meet or violates the provisions of Article 12 paragraphs (1), (2), or (3), Article 21 paragraph (2), Article 22 paragraphs (1) or (2), Article 28, Article 29 paragraph (1), and/or Article 30 paragraphs (1) or (2) will face administrative penalties."	"(1) The Minister, governor, or regent/mayor must impose administrative sanctions on those responsible for businesses and/or activities if violations of the provisions occur during supervision regarding: a. business licensing; or b. government approval. These violations pertain to environmental approvals and laws and regulations in the field of environmental protection and management found."

Upon review of the foregoing, it is evident that a phrase no longer in use was previously incorporated into various sanction provisions within Government Regulation No. 101 of 2014: "that do not comply with the provisions". Under Government Regulation Number 22 of 2021, administrative sanctions are imposed solely when violations are identified during supervision. This shows that sanctions are only enacted when violations occur, rather than when requirements are merely unmet. Under Government Regulation No. 101 of 2014, individuals who fail to meet the conditions stipulated in the relevant regulations may face administrative sanctions. This notably contrasts with the provisions of Government Regulation No. 22 of 2021, which solely address violations or activities that have already commenced. Such observation suggests that preventive measures are not fully optimized within the Business Licensing and Environmental Approval processes. This also demonstrates that, indirectly, the state does not explicitly enforce sanctions concerning the unlawful management of hazardous waste. Furthermore, the enforcement of environmental law consequently becomes less effective.

Quoting Sukanda Husin's opinion in the Constitutional Court Decision No. 18/PUU-XII/2014, environmental law is a functional law. This means it is enforced through three main mechanisms: administrative, civil, and criminal law. Among these, administrative law enforcement is regarded as the most important and primary (*primum remedium*), whereas criminal law is seen as the last resort (*ultimum remidium*) (Mahkamah Konstitusi Republik Indonesia, 2014). Therefore, sanctions remain necessary to ensure that environmental law enforcement functions effectively, especially in managing hazardous waste without a permit. Legal rules can be categorized into those that contain commands, prohibitions, and permissions (Mertokusumo, 2007). Legal rules expressed as commands and prohibitions are imperative or coercive, whereas legal rules in the form of enactments are optional. According to Sudikno Mertokusumo, every violation of legal norms should fundamentally be subject to sanctions. However, certain types of violations of legal norms are exempt from sanctions, including acts that are justified or have a valid basis, emergencies, necessary defense, and the use of *force majeure*

(Mertokusumo, 2007). The regulations governing hazardous waste management under Law Number 6 of 2023 and Government Regulation Number 22 of 2021 are not categorized as exempt from sanctions. Additionally, to reinforce the idea that environmental law is a functional law, it still requires a sanctions framework for effective enforcement. The lack of penalty mechanisms for managing hazardous waste without permits essentially compromises Indonesians' constitutional rights to a clean and healthy environment, as stated in Article 28H paragraph (1) of the 1945 Constitution of the Republic of Indonesia.

Regulation Concerning the Transboundary Movement of Hazardous Waste in Indonesia

Figure 2 illustrates the global flow of e-waste, highlighting key points about the transboundary movement of hazardous waste. This global context is essential for understanding Indonesia's regulatory position, as figure 1 previously outlined the domestic licensing framework governing hazardous waste management, including procedures that authorize transboundary movements such as exports and transit.

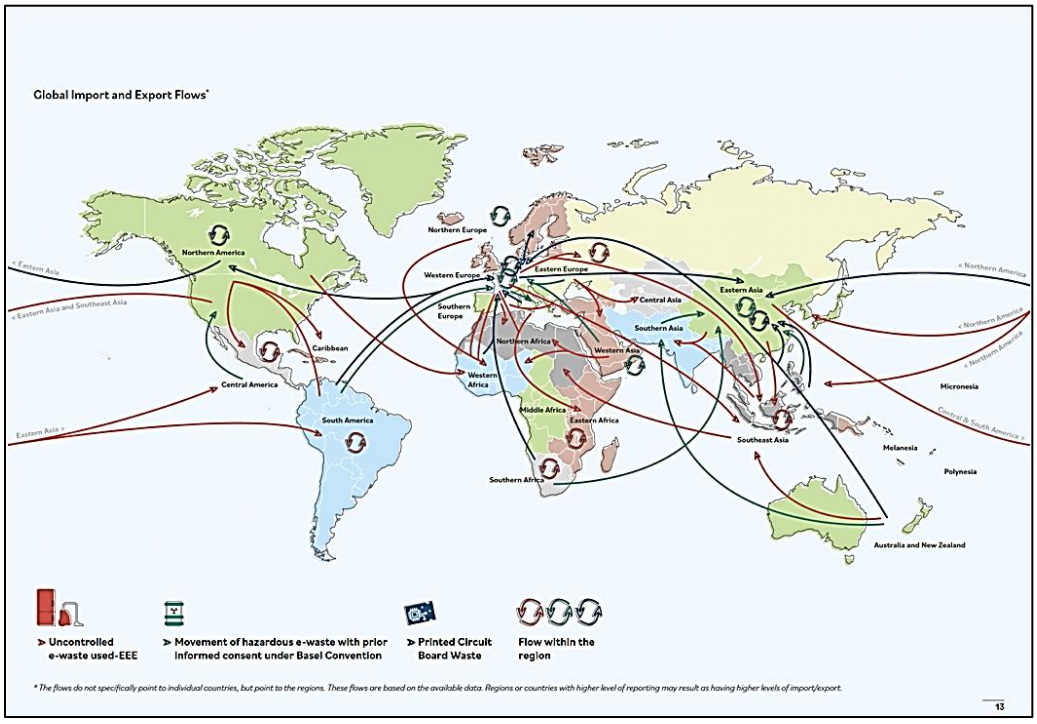

Figure 2: Global Import and Export Flows of E-Waste Used EEE (Cornelis *et al.*, 2024)

The map above illustrates the global flow of a hazardous waste known as electronic waste (e-waste), predominantly originating from developed nations in the Global North and being transferred to developing countries in the Global South. Indonesia may not always be recognized as a major destination like West Africa or South Asia, but it holds a strategic and vulnerable position in the transboundary movement of e-waste within Southeast Asia. Indonesia's geographical and economic position places it at the

intersection of international and regional trade routes in the Asia-Pacific (Sumrahadi, 2025). The map indicates that Southeast Asia, including Indonesia, serves as a hub for e-waste reception and transit, primarily originating from Japan, South Korea, Europe, and North America. These shipments are frequently masked as second-hand electronics, used goods, or recycled raw materials, which obscures the distinction between legal and illegal trade activities. The map legend illustrates the distinction between "controlled" and "uncontrolled" flows. In Indonesia, the core issue is inadequate regulations and enforcement. The country seems to lack complete sovereignty over transboundary waste movements into its territory.

Export of Hazardous Waste in Indonesia

Regarding the transboundary movement of hazardous waste, Indonesia legally participates in both the export and transit of hazardous waste, activities that require coordination between the Ministry of Environment and Forestry and the Ministry of Trade. The regulatory procedure governing hazardous waste exports is illustrated in figure 3.

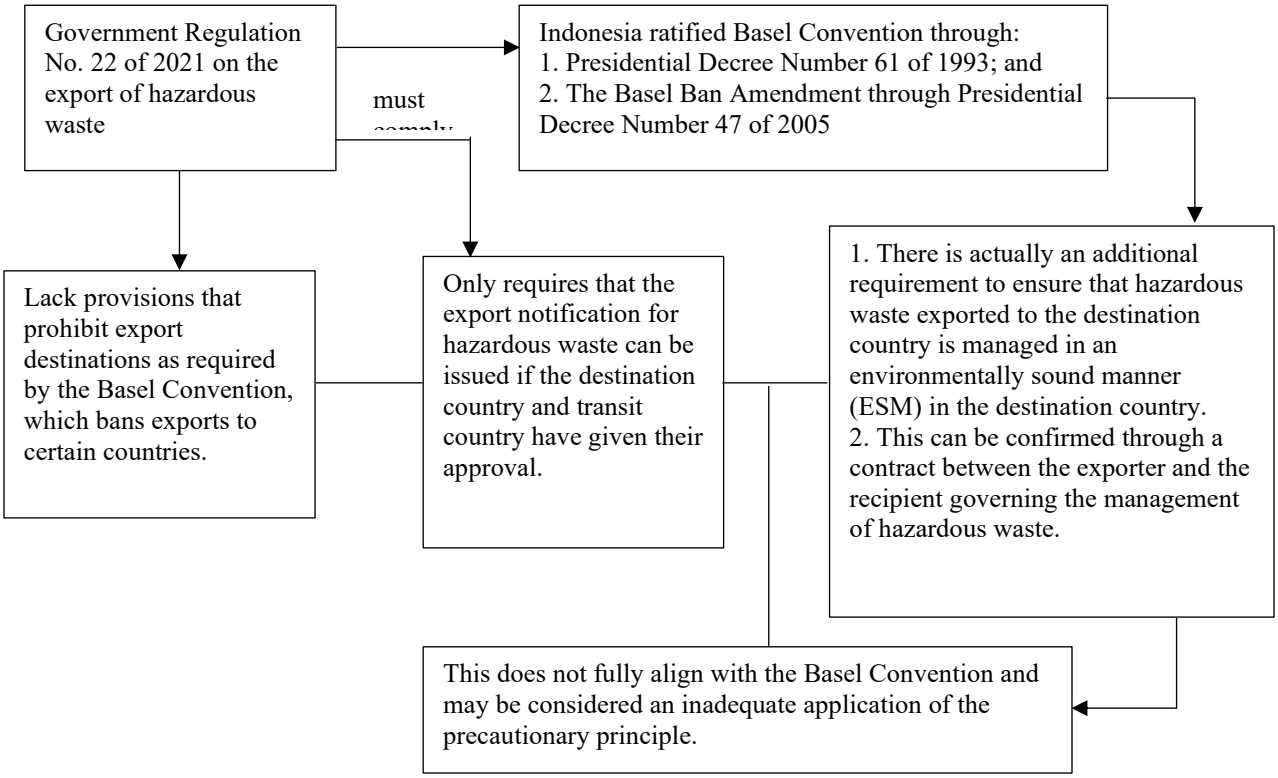
Government Regulation No. 22 of 2021 on the export of hazardous waste
must
Indonesia ratified Basel Convention through:
1. Presidential Decree Number 61 of 1993; and
2. The Basel Ban Amendment through Presidential Decree Number 47 of 2005
Lack provisions that prohibit export destinations as required by the Basel Convention, which bans exports to certain countries.
Only requires that the export notification for hazardous waste can be issued if the destination country and transit country have given their approval.
1. There is actually an additional requirement to ensure that hazardous waste exported to the destination country is managed in an environmentally sound manner (ESM) in the destination country.
2. This can be confirmed through a contract between the exporter and the recipient governing the management of hazardous waste.
This does not fully align with the Basel Convention and may be considered an inadequate application of the precautionary principle.

Figure 3: Regulatory Procedures of the Export of Hazardous Waste in Indonesia

In principle, the export of hazardous waste in Indonesia is subject to several conditions. First, hazardous waste may be exported only when it cannot be utilized or processed domestically within a specified period. Second, export is permitted only where the necessary technology for environmentally sound management is unavailable within Indonesia. Despite these conditions, Minister of Trade Regulation No. 18 of 2021, as amended by Minister of Trade Regulation No. 40 of 2022, does not classify hazardous

waste as prohibited export goods. Conversely, certain hazardous wastes listed in the annexes are expressly prohibited from import. However, certain hazardous waste included in the annex falls under the category of prohibited import waste. Despite this, the export procedures described above do not fully comply with the Basel Convention. There are two points to consider. First, Government Regulation No. 22 of 2021 and various ministerial regulations governing exports lack provisions prohibiting exports to destinations that are required by the Basel Convention, which bans exports to certain countries as below.

a. "A State or group of States belonging to an economic and/or political integration organization that are Parties, particularly developing countries, which have prohibited by their legislation all imports, or if it has reason to believe that the wastes in question will not be managed in an environmentally sound manner, according to criteria to be decided on by the Parties at their first meeting";
b. "a non-Party state";
c. "a state or group of states within the area south of 60° South latitude, whether or not such wastes are subject to transboundary movement" (United Nations Environment Programme, 2014).

This provision is not explicitly included in the regulations governing the transboundary movement of hazardous waste, which are technically regulated but not sufficiently detailed in Government Regulation No. 22 of 2021. Generally, regulations concerning hazardous waste export are delegated to the Minister of Trade, who acts upon receiving notification of export from the Minister of Environment. Second, the Government Regulation *a quo* only requires that the export notification for hazardous waste can be issued if the destination country and transit country have given their approval. However, there is an additional requirement to ensure that hazardous waste exported to the destination country is managed in an environmentally sound manner (ESM) in the destination country. This can be confirmed through a contract between the exporter and the recipient governing the management of hazardous waste. This is as stipulated in Article 6 paragraph (3) of the Basel Convention (United Nations Environment Programme, 2014), which states:

> "The State of export shall not allow the generator or exporter to commence the transboundary movement until it has received written confirmation that:
> (a) The notifier has received the written consent of the State of import; and
> (b) The notifier has received from the State of import confirmation of the existence of a contract between the exporter and the disposer specifying environmentally sound management of the wastes in question."

Therefore, the key question arises is why Indonesia has not implemented detailed and comprehensive regulations on hazardous waste export, as mandated by the Basel Convention? This issue is further highlighted in the Administrative Requirements for Form 3 Notification of Export of Hazardous Waste, outlined in the Minister of Environment and Forestry Regulation Number 6 of 2021 concerning Procedures and Requirements for Managing Hazardous and Toxic Waste (Kementerian Lingkungan Hidup dan Kehutanan, 2021). This process requires attaching a cooperation contract between the exporter and the producer, as well as a cooperation agreement between the importer and the exporter.

The only clause states that "the importer declares that the hazardous waste will be accepted and managed", but it does not explicitly require environmentally friendly management (ESM), as mandated by the Basel Convention. Indonesia's national regulations, which do not fully align with the Basel Convention, may be seen as an inadequate application of the precautionary principle. Hadjon, 1994 states, licensing aims to prohibit specific actions or related activities and to regulate society. Therefore, it is evident that the export permit system for hazardous waste involves multiple ministries, but it does not fully align with the provisions of the Basel Convention, despite being ratified through Presidential Decree No. 61 of 1993 and the Basel Ban Amendment through Presidential Decree No. 47 of 2005. Indonesia's initial response indicates that exporting hazardous waste poses a lesser environmental threat within its borders than importing it, which is governed by stricter regulations and bans the import of hazardous waste. Furthermore, regarding Indonesia's role as a transit country, Article 409 of Government Regulation Number 22 of 2021 states that if hazardous waste is to be imported into Indonesia for transit, the exporting country must submit a notification request through the minister. However, the regulations detailing Indonesia's status as a transit country in the transboundary movement of hazardous waste are not specific. Generally, it is only necessary to comply with applicable laws and regulations. This suggests that simply complying with the Basel Convention is sufficient, without requiring additional domestic regulations to interpret it.

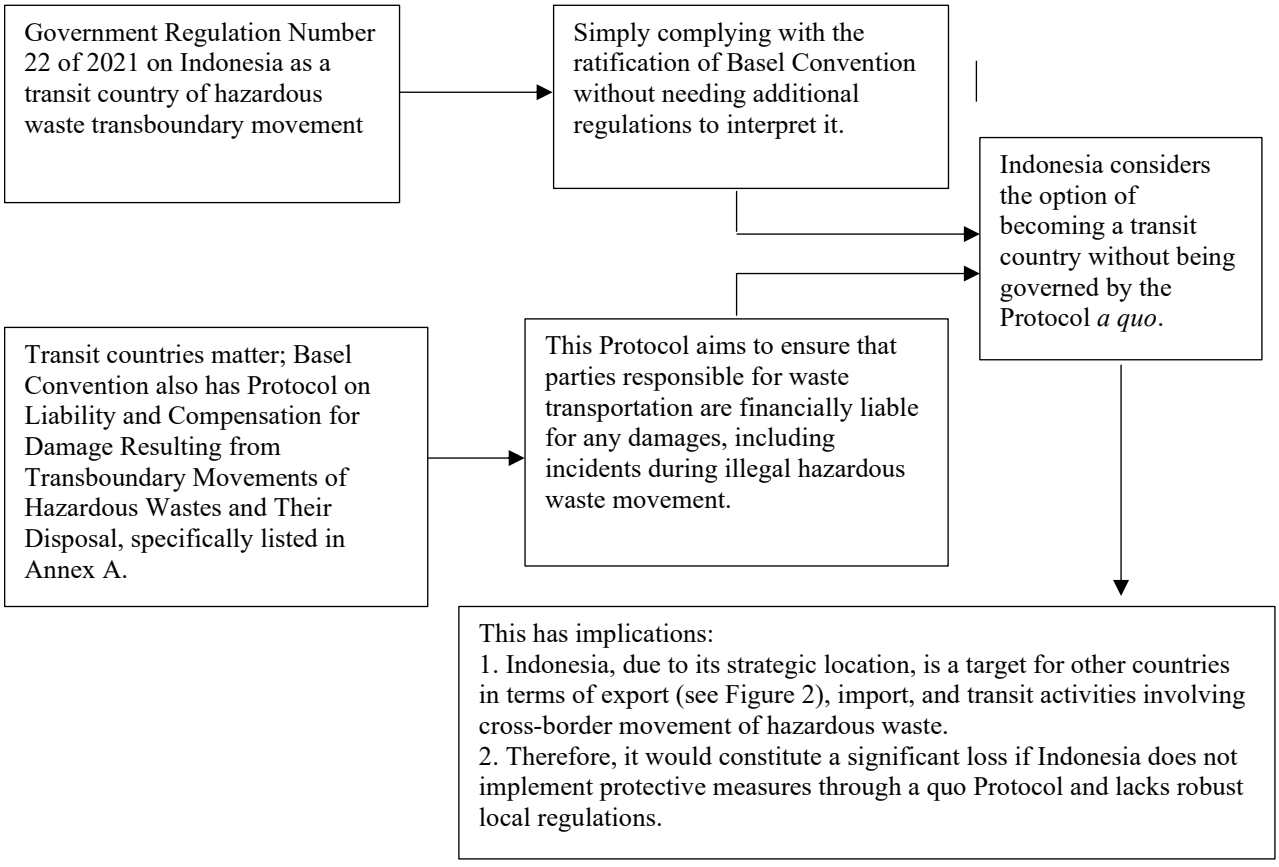
Government Regulation Number 22 of 2021 on Indonesia as a transit country of hazardous waste transboundary movement
Simply complying with the ratification of Basel Convention without needing additional regulations to interpret it.
Indonesia considers the option of becoming a transit country without being governed by the Protocol *a quo*.
Transit countries matter; Basel Convention also has Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal, specifically listed in Annex A.
This Protocol aims to ensure that parties responsible for waste transportation are financially liable for any damages, including incidents during illegal hazardous waste movement.
This has implications:
1. Indonesia, due to its strategic location, is a target for other countries in terms of export (see Figure 2), import, and transit activities involving cross-border movement of hazardous waste.
2. Therefore, it would constitute a significant loss if Indonesia does not implement protective measures through a quo Protocol and lacks robust local regulations.

Figure 4: Regulatory Procedures for the Transboundary Movement of Hazardous Waste in Indonesia as a Transit Country

Meanwhile, Indonesia's status as a transit nation in the transboundary movement of hazardous waste is illustrated in figure 4.

Indonesia also considers becoming a transit country without being bound by the Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal, specifically listed in Annex A. The mentioned Protocol is part of the Basel Convention, which sets the obligations for parties to establish suitable rules and procedures in the areas of liability and compensation for damages caused by the transboundary movement and disposal of hazardous wastes and others wastes (Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal, 1999). This Protocol aims to ensure that parties responsible for waste transportation are financially liable for any damages, including incidents during illegal hazardous waste movement. Annex A includes transit countries that are not Contracting Parties, but these countries must have ratified a multilateral or regional agreement on transboundary hazardous waste movement and gained rights under the Protocol for damages within their territory. This creates opportunities for better protection for countries in Annex A. Although they are not Contracting Parties, Transit Countries receive protections under the Protocol (Protocol on Liability and Compensation for Damage Resulting from Transboundary Movements of Hazardous Wastes and Their Disposal, 1999).

Figure 3 and 4 illustrate that Indonesia possesses legal gaps resulting from inadequate regulations concerning exports and its role as a transit nation. Concerning exports, lenient regulations pose a risk to the global environment. Additionally, as a transit country, lenient regulations may enable Indonesia to become a repository for hazardous waste from various nations, including in cases of illegal transboundary movement (refer to Figure 1). Looking at the map shown in figure 2, it is clear that Indonesia, due to its strategic location, is a target for other countries seeking to engage in export and transit activities involving transboundary movement of hazardous waste. Therefore, it would be a significant loss if Indonesia did not protect itself by joining *a quo* protocol and/or establishing stronger regulations to protect its own country.

Subsequently, regarding the import of hazardous waste, stricter regulations govern this process than those governing the export and transit of hazardous waste across borders. Several regulations related to the import of hazardous waste can be found in the following rules:

a. Regulation Number 22 of 2021 on the Implementation of Environmental Protection and Management;
b. Minister of Trade Regulation Number 18 of 2021 on Prohibited Export Goods and Prohibited Import Goods, as amended by Minister of Trade Regulation Number 40 of 2022; and
c. Ministry of Trade Regulation Number 20 of 2021 on Import Policies and Regulations, as amended by Ministry of Trade Regulation Number 20 of 2021.

Article 69 paragraph (1) letter d of Law No. 32 of 2009, as amended by Law No. 6 of 2023, prohibits anyone from importing hazardous waste into Indonesia. The explanation of the *a quo* article notes that this prohibition includes imports. However, the ban is not absolute. According to Article 2 paragraph (3) letter h of Minister of Trade Regulation

No. 18 of 2021, prohibited imports include listed hazardous waste as specified in Annex II of the regulation, effective since January 1, 2022. This regulation was amended by Ministerial Regulation No. 40 of 2022, which lists approximately 45 tariff codes for registered hazardous waste, along with their descriptions and relevant details (Kementerian Perdagangan, 2022). Therefore, Indonesia appears to permit the import of hazardous waste despite the environmental law's prohibition, indicating that the restriction is not absolute. Furthermore, the regulations pertaining to the importation of hazardous waste are regarded as somewhat lenient and subject to interpretation.

From a circular economy standpoint, reusing hazardous waste offers tangible economic advantages. Data from the Ministry of Environment and Forestry's reporting system for hazardous and non-hazardous waste management indicates that in 2022, hazardous waste accumulation reached 6.9 million tons. Of this amount, 42%, or 2.9 million tons, was repurposed as fuel and raw materials. The primary application of hazardous waste is as a raw material in copper ingots and as a substitute for cement raw materials (Kompas, 2023). However, Indonesia still qualifies as a surplus producer of hazardous waste for a domestic circulation. The leniency in exports also shows that Indonesia has not yet developed adequate technology to optimize hazardous waste for a circular economy. This is also reflected in how hazardous waste import management was carried out. Between January and May 2020, data from the Directorate General of Waste, Hazardous and Toxic Substances Management under the Ministry of Environment and Forestry shows that the government granted 101 import permits for waste, including metals, plastics, textiles, rubber, and glass (Ekarini *et al*., 2024). A common but poorly documented issue is that imported materials often do not align with the import notification. For instance, hazardous waste may be included in imported waste shipments even if the import permit was only for plastic waste, with hazardous materials being carried along unintentionally. In 2019, the Directorate General *a quo* at the Ministry of Environment and Forestry reported that several waste shipments in Surabaya were returned or re-exported to their countries of origin. This included 76 containers of hazardous waste sent back to the United States, eight containers from Australia, 20 from Germany, and 28 from the United States (Ekarini *et al*., 2024).

Considering the elimination of several sanctions related to the illegal management of hazardous waste domestically, and acknowledging the existence of certain deficiencies within the regulations governing transboundary movement—specifically concerning export and transit—it can be articulated that, indirectly, the state is permitting the disposal of hazardous waste through the relaxation of regulatory measures.

Environmental Rights Perspective on Hazardous Waste Management in Indonesia

The evolution of environmental rights in Indonesia is explicitly reflected in Point 14 of Standards and Regulations No. 7 on Human Rights to Land and Natural Resources, issued by the National Commission on Human Rights (Komnas HAM). This provision articulates that the utilization and management of land and natural resources by industries entail risks and adversely impact communities and the environment. Such impacts compromise the enjoyment of the right to a healthy and sustainable environment and threaten intergenerational justice. Additionally, this situation is exacerbated by

inadequate oversight or control by the state authorities (Komisi Nasional Hak Asasi Manusia Republik Indonesia, 2021). Furthermore, Article 383 also states that the dangers of waste resulting from the exploitation of land and natural resources can adversely affect reproductive health and increase vulnerability among girls (Komisi Nasional Hak Asasi Manusia Republik Indonesia, 2021).

Globally, there is a growing recognition of environmental rights. According to the United Nations Environment Programme (UNEP), environmental rights refer to any declaration of a human right to environmental conditions of a specific quality, emphasizing that human rights and the environment are interconnected. The right to a healthy environment is included in over 100 constitutions (Russo, 2023). UNEP then classifies environmental rights into two aspects: substantive rights and procedural rights (UNEP, 2025). Substantive rights encompass civil and political rights, including the right to life, freedom of association, and protection from discrimination. They also comprise economic and social rights, such as the right to health, adequate food, and a decent standard of living; cultural rights, including access to places of worship; and collective rights impacted by environmental degradation, such as those of indigenous peoples. These rights are predominantly codified in the 1945 Constitution of the Republic of Indonesia. Conversely, procedural rights pertain to the formal mechanisms employed to realize substantive rights legally.

Regarding the management of hazardous waste, both at the national level and in the transboundary movement of hazardous waste, there is still a need for increased attention to environmental rights, both procedurally and substantively. First, at the national level, there are gaps in administrative sanctions, which have become more lenient than previous regulations. Generally, environmental protection and human rights should be connected in two main ways: requiring a certain level of environmental protection as a necessary condition for safeguarding human integrity, and protecting cultural relationships between individuals, groups, and their environment (Le Moli, 2020). The weak administrative sanctions and the removal of criminal penalties for illegal hazardous waste permits show a lack of focus on being careful in handling hazardous and toxic materials that can specifically endanger human life and the environment in general.

Secondly, managing hazardous waste internationally involves mechanisms for transboundary movement. However, lenient export regulations, insufficient protections for transit countries, and easily bypassed norms on hazardous waste imports can severely harm the global environment. Likewise, the international legal framework widely acknowledges the principle that "prevention is better than cure" in environmental law (Duvic-Paoli, 2018). Similarly, the general idea of the precautionary principle is that states must act carefully and with foresight when engaging in activities within their jurisdiction that may have negative consequences for the environment, even when there is a lack of scientific evidence (Malaihollo, 2021). Reflecting on Indonesia's hazardous waste management regulations, it appears they adopt a reactive approach, responding only after pollution or harm to humans has occurred, and lack proactive preventive measures.

Conclusion

This study demonstrates that although Law No. 32 of 2009 on Environmental Protection and Management incorporates key environmental principles derived from the Stockholm Declaration and the Rio Declaration, subsequent legal developments, particularly Law No. 6 of 2023 and its implementing regulations, exhibit notable deficiencies. While hazardous waste management remains subject to licensing requirements, the absence of robust and consistent sanctions for licensing violations significantly weakens enforcement. Moreover, regulatory frameworks governing the export and transit of hazardous waste remain insufficient and are not fully aligned with the Basel Convention and its associated Protocols. These regulatory gaps, both at the domestic and transboundary levels, indirectly create conditions that permit hazardous waste disposal under the guise of regulatory flexibility. From an environmental rights perspective, such permissiveness undermines constitutional guarantees to a clean and healthy environment and contradicts Indonesia's international environmental commitments.

Accordingly, this study recommends several key measures. First, Indonesia should move beyond formal ratification and fully implement the Basel Convention, particularly with respect to hazardous waste export and transit regulations. Second, export authorization procedures should explicitly require contractual guarantees of environmentally sound management (ESM) in destination countries, ensuring that acceptance of hazardous waste is accompanied by enforceable environmental responsibility. Third, Indonesia should impose an absolute prohibition on hazardous waste imports, rather than limiting bans to specific waste categories listed in regulatory annexes. Strengthening these measures would enhance legal certainty, reinforce the precautionary principle, and ensure that hazardous waste governance in Indonesia genuinely supports environmental protection and the realization of environmental rights for present and future generations.

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Author's Declarations and Essential Ethical Compliances

Author's Contributions (in accordance with ICMJE criteria for authorship)
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The author(s) solemnly declare(s) that this research has not involved any human subject (body or organs) for experimentation. It was not clinical research. The contexts of human population/participation were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of Helsinki Declaration does not apply in cases of this study or written work.

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The author(s) solemnly declare(s) that this research has not involved any animal subject (body or organs) for experimentation. The research was not based on laboratory experiment involving any kind animal. The contexts of animals were only indirectly covered through literature review. Therefore, an Ethical Clearance (from a Committee or Authority) or ethical obligation of ARRIVE does not apply in cases of this study or written work.

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